

Claims

1. Apparatus for injecting a fluid into body tissue, the apparatus comprising:
a hollow needle; and
fluid delivery means,
wherein the apparatus is adapted to actuate the fluid delivery means in use so as to concurrently inject fluid into body tissue during insertion of the needle into the said body tissue.
2. Apparatus as claimed in claim 1 adapted to automatically inject fluid into body tissue during insertion.
3. Apparatus as claimed in claim 1 or claim 2, further comprising needle insertion means for guiding insertion of the needle into the body tissue.
4. Apparatus as claimed in any of claim 1 or claim 2, further comprising means for sensing when the needle has been inserted to a sufficient depth for injection of the fluid to commence.
5. Apparatus as claimed in any of claim 1 or claim 2, further comprising means for presetting the depth to which the needle is inserted prior to injection of the fluid being commenced.
6. Apparatus as claimed in claim 4, wherein the sensing means comprises an ultrasound probe.
7. Apparatus as claimed in claim 4, wherein the sensing means comprises means for sensing a change in impedance or resistance.
8. Apparatus as claimed in claim 1 or claim 2, further

comprising:

a base for supporting the needle; and
a housing for receiving the base therein,
wherein the base is moveable relative to the
housing such that the needle is retracted relative to
the housing when the base is in a first rearward
position relative to the housing and the needle extends
outwardly from the housing when the base is in a second
forward position within the housing.

9. Apparatus as claimed in claim 1 or claim 2, wherein
the fluid delivery means comprise piston driving means
adapted to inject fluid at a controlled rate.

10. Apparatus as claimed in claim 9, wherein the piston
driving means are actuated by the base being moved in
the axial direction relative to the housing.

11. Apparatus as claimed in claims 9, wherein the
piston driving means are motorised.

12. Apparatus as claimed in claim 11, further
comprising a sensor for sensing that insertion of the
needle has commenced and actuating the piston driving
means.

13. Apparatus as claimed in claim 11, further
comprising a control mechanism for controlling the rate
at which fluid is injected via the motorised piston
driving means.

14. Apparatus as claimed in claim 8, further comprising
a sensor for sensing relative movement between the base
and the housing.

15. Apparatus as claimed in claim 1 or claim 2, further
comprising means for applying a voltage to the needle.

16. Apparatus as claimed in claim 1 or claim 2, further comprising means for recording the identity of the subject to be treated and data from a treatment process.

17. A fluid dispense vessel for use in the apparatus as claimed in claim 1 or claim 2, wherein a bar-code is provided on the vessel to identify the contents thereof.

18. A method of injecting a fluid into body tissue, the method comprising:

injecting the fluid into the body tissue through a hollow needle while the said needle is being inserted into the said body tissue.

19. A method as claimed in claim 18, wherein the fluid is a liquid comprising genes.

20. A method as claimed in claim 19, wherein the liquid comprises plasmid DNA.

21. A method as claimed in claim 18, wherein the needle tip is inserted into the skin and injection is then carried out while the needle is inserted further into the body tissue.

22. A method as claimed in claim 18 or 21, wherein the injection is commenced when the needle reaches a first desired depth in the body tissue and is stopped when the needle reaches a second desired depth in the body tissue.

23. A method as claimed in claim 18 or 21, wherein a change in impedance or resistance is measure to determine when the needle has reached a desired depth in the body tissue.

24. A method as claimed in claim 22, wherein the depth

of the needle in the body tissue is sensed using an ultrasound transducer.

25. A method of electroporation wherein fluid is injected into body tissue by the method of claim 18 or 21 and a voltage is then applied to the needle.

26. A method of electroporation wherein fluid is injected into body tissue by the method of claim 18 or 21, the needle is withdrawn from the body tissue, an electrode is inserted in the place of the needle, and a voltage is applied to the electrode.

27. A method of determining when a needle has been inserted to a desired depth in body tissue comprising measuring a change in impedance as the needle is inserted into the body tissue.

28. A method as claimed in claim 27, wherein two needles are inserted into the body tissue adjacent one another and the impedance between the needles is measured.